

ELECTRICAL DESIGN ANALYSIS

TRANSMITTER FACILITY

STATINTL

60 % REVIEW PRINT
JAN. 2 2.1968

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C/DC
File

STATINTApproved For Polosco 2001/03/03 · CIA_PDP78-06632A000300010001-1

Project	Transmitte			of	17	
Feature	Electrical Design Analysis	Designed	M.I.	Date 18	Jan	1968
Item	Design Analysis Summary	Checked	-	Date		

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covers Transmitter Building and Gate House including the installation of government furnished 200 kW diesel engine driven generator sets with switchgear; interior work including power, lighting, control, grounding system, fire alarm, and outlets, conduit, terminal cabinet, cable tray and floor trench system for telephone, intercommunication and technical equipment wiring by others; and exterior work including extension to existing primary power distribution, protective lighting, secondary power service to Gate House and provisions of duct sleeves under roads and paved area for autenma cables by others.

II. DESIGN CRITERIA:

- a. Request for Proposal on Design, POOGM letter of 15 March 1966
 with the following attachments:

 STATINTL
 - 1. Using Agency Sketch Drawings:

No drawing number

Dwg. No. D5345-T/D-01.

Dwg. No. D5020-T/D-01,

Dwg. No. D5341.02-T/F-01,

Dwg. No. D5345-T/CL-01.

Dwg. No. D5345-T/E-01,

No drawing number

Interior Grounding

Exterior Grounding

Floor Plan

Plot Plan, Transmitter Site

Bus Duct & Power Panel Locations

Government Furnished Electrical

Equipment

- 2. Scope of Work.
- 3. POD Comments:on the Scope of Work, dated March 1966.
- 4. Description and Analysis of Electrical System (System 5).
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Approved Formula 2A000300010001-1 Project Transmitte Feature Electrical Design Analysis Summary Checked Date Date 18 Jan 1968

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- b. Scope of Work attached to and made a part of Contract No.
- c. Using Agency Information, Ref: POOGM letter of 9 April 1966 with the followings:
 - T.M.C. Power Distribution, Inc. drawings for 200 KW engine generator set,

Radiator Shroud & Guard Dwg. No. 15554-C, Lockout for Shockmounts Dwg. No. 15342-C. Mounting Detail Dwg. No. 15587-B. Battery Charger Wiring Diagram Dwg. No. 15549-B, Battery Charger 2412-52 Dwg. No. 155751-B, Standard Engine Wiring Harness Dwg. No. 15426-C. Schematic Dwg. No. 15520-D, Assembly Drawing Dwg. No. 15770-D, Assembly Drawing Dwg. No. 15416-D, Storage Battery (Ordnance) Dwg. No. 15589-D, Wiring Diagram Dwg. No. 17016-D, Cabinet & Door Layout Dwg. No. 15755-D,

Installation and Maintenance Manual,
 Granger Associates Model 747L antenna.

No drawing No.

3. Using Agency Sketch Drawings, same drawings listed in design criteria reference a.l. plus the followings;

Dwg. No. D5345-T/S-01, Heat Load

Dwg. No. D5345-T/S-02, Antenna Cable Tray System

Dwg. No. D5345-T/S-03, Transmitter/Exciter Cable Tray System

Point to Point Wiring Diagram

Dwg. No. D5345-T/S-O4, Signal Cable Tray System

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Project	Transmitter Electrical Design Analysis	Designed M. T.	of 17 Date 18 Jan 1968
Feature	Design Analysis Summary		Date
ttem	700-12-		
OT ATINI	TL d. Additional Information, Re	r: POOGM letter of	18 June 1966 with
STATIN	the following	drawings	
	one lottowing		
	n w. n 009316 County	. Wa E CUDD Ammanas	na in m t
	Dwg. No. D-208316, System		merro
STATINTL	Dwg. No. C-208290, Load F	lox Arrangement	
STATINTE			
	e. Review Comments for	30% completion of	the design.
a single Anna a	f. Info for Facility Site cha	ange, Ref: POOGM let	ter of 29 November 1
	was a second of the second of		
	g. Instruction Book for Rotat	table Unidirectional	HF Antenna 237B-3
	with 2 prints for 437C-3A	Antenna.	
	h. Data for Broad Band Dipole	Antenna 437G-2A, F	ef: POOGM letter
STATINTL	of 1 December 1967.		
STATINTL	i. As-Built Dwgs. for		
		eference for existing	g primary power
	line, Ref: POOGM letter	Of The December The !!	
"Here"			33 Tanuanu 1067
	j. Memorandum for the Record		
STATINTL	with	***	bur letter of
	16 January (Ref. No. C-16	-68).	
	k. Department of the Army Te	chnical Manuals, TM	5-811-1 and -2.
STATINTL	1. Applicable		
3 3 3	m. NEC 1965.		
	n. IES Lighting Hand Book. 4	th edition.	

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Project	Transmitter		of 17
Feature	Klectrical Design Analysis	Designed M.I.	Date 18 Jan 1968
Item	Design Analysis Summary	Checked	Date

III. DESIGN RESUME:

Generally, five basic design pointers were considered in the electrical system layout such as safety capacity, flexibility, accessibility and reliability.

Circuit design will conform to the requirements of the National Electrical Code.

Circuit loading is generally 20-smpere, 2-wire, 120-volt for lighting and receptables.

In all cases, loading of circuit will not exceed 80% of the branch circuit rating.

Branch circuits and feeders overcurrent protection will be rated 25% greater than the load rating, but shall not exceed 150% of the load.

Specific rules for fuse and circuit breaker setting and coordination of the National Electrical Code will be followed.

Basic limitations on voltage drop for this design will be:

3% for feeders or sub-feeders from transformer to lighting
or power panelboards.

2% for branch circuits to lighting or power loads.

Motor circuits will be 2 & 3% of the above respectively.

The number of lighting and power branch circuits will be based on the final load requirements of the building.

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Feature	Electrical Design Analysis	Designed	M.I.	Date 18	an l	968
item	Design Analysis Summary	 Checked_		Date		

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Electric power will be derived from plug-in bus duet at 240 volts,
3-phase generators are GFM and will be wired for complete integration
with

Building utility load power will be 120/208 volts derived from a 150 KVA dry type transformer except for air conditioning equipment.

Grounding is a stringent requirement of this project. Design is prepared in accordance with the using service grounding requirements and the National Electrical Code.

There will be two separate grounding systems though it is realized that a single grounding source is generally always used for grounding both the system and equipment.

The building system neutral will be grounded at the power entrance cubicle located in the power room and tied to the transformer secondary ground.

All metal throughout the building such as reinforcing steel, steel cabinets, panelboards, antenna switches, hardware, cable shields, etc. will be physically bonded together and connected to the grounding grid or peripheral ground wire or indicated on the drawings.

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Project				Sheet_	6	of17	
Feature				Designed		Date	
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ELECTRICAL DESIGN ANALYSIS

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TRANSMITTER BUILDING

Project	TRANSMITTER			01	Z	
eature	FLECTRICAL DESIGN ANALYS		Designed			
::-	ELECTRICAL DESIGN ANDLES					
		LOAD & SERVICE	ANALYSIS		, Bord Gurge	ty the
	CONNECTED LOAD :	789,786	<u> K</u> V Å			188 i Dulla
	MAX. DEMAND LOAD	789,786 (CONN. LOAD)	X 0.93	TOR)	735.2	/A
	BLDG. DEMAND LOAD :	735.2	1.1		- 668.A	K.Y.A
	SERVICE 2.40		3 PHASE, 3			

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SERVICE SIZES ARE DERIVED UNDER SERVICE SIZE ANALYSIS WHERE DISTANCE FROM THE TRANSFORMER STATION IS CONSIDERED IN CALCULATING SIZE.

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SINC. roject TRANSMITTE TRANSMITTER BUILDING m ELECTRICAL DESIGN ANALYSIS CONN. LOAD | DEMAND | DEMAND ITEM LOAD DESCRIPTION FACTOR LOAD-VA FACTOR LOAD-VA FLUORESCENT LIGHTS: 4600 100 4600 PANEL "A" 1,610 100 1610 INCANDESCENT LIGHTS RECEPTACLES 1 3,780 0,50 1 1890 REFRIGERATOR 510 1.00 510 360 100 360 EXHAUGT FANS 10,500 0.80 8,450 RANGE TOASTER 2,700 0.80 2.160 7,000 1,00 7,000 HOT WATER HEATER 4500 0.70 3150 SPALE 35,560 0.83 29680 SUB-TOTAL PANEL B FLUORESCENT 'LIGHTS 1400 1.00 114001 NCANDESCENT LIGHTS 200 1 100 200 2700 5,400 150 RECEPTACLES 3250 0.10 1.575 SPARE 0,82 15,875 19,250 SUB-TOTAL INCANDESCENT LIGHTS 4.700 1.00 4,700 PANEL "C" 2160 000 1090 RECEPTACLES 750 1.00 750 ROOF VENT. BATTERY CHARGERS 600 0.50 300 3,000 2170 2100 SPACE 8930 11,210 0.80 Sibb TOTAL MOTOR. COUTED CENTER MIC" AIR COOLED CONDENSERS 16200 1.00 162001 CHILLED WATER STRC PUMPS 11,400 1.50 11400 1.60 148201 14820 AIR HANDLING UNITS POST HEATER 0.0 NI 2236 1,00 112236 WATER CHILLER. 5 VENT. SYSTEM 9,660 1.0 9660 170,316 0.96 164,316 FOR TATAL

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^{**} HEATING EQUIP DORS NOT RUN WHEN A/C UNIT ON.



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eature TRAL	SMITTER SULDING	Desi	gned Ked	Date_		
em ELECTRIC						
en e	LOAD	SCHE	ט ע	E		
ITEM	LOAD DESCRIPTION	CONN. LOAD	DEMAND FACTOR	DEMAND LOAG-VA		
DANEL D'	FLOOD LIGHTS	8400	1.0	8400		
	GATE HOUSE	2,000	1.0	2000		
Commence of the Commence of th	OBSTRUCTION LIGHTS	1,700	1.0	1,700		
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	, 'C'	11,210	1	8,930	*	-
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m ELECTRIC	AL DESIGN ANALYSIS	Che C H E		Date	<u> </u>				
	LOAD		DEMAND	DEMAND					
ITEM	LOAD DESCRIPTION	CONN. LOAD	FACTOR	LOAD-VA					
WGR. M"	TRANSMITTER RM. (109) NO.1	166,000	1.0	166000					
- Maria de Maria de Carta de C	4 (110) NO.2	159,000	1.0	159,000		1			
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	SPARE	160,000	0.8	128000					
nggan mahasiri sigir i sadaran maarin i i i i i i	MOTOR CONTROL CENTER "MCC"	170,316	0.96	164,316					
		789,336	0.93	734701		-			
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DRY TYPE INTERIOR DISTRIBUTION TRANSFORMER.

PRIMARY 240V, 3+3W, 606PS.
5ECONDARY 120/208V, 3+4W

TOTAL CONNECTED LOAD = 117.2KVA

TOTAL DEMAND LOAD = 100.6 KVA DEMAND FACTOR = 0.86

MAXIMUM DEMAND LOAD = 100.6 KVA DIVERSITY FACTOR = 1.0

REFERENCE a.4.

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	ot17
Project TRANSMITTER	Designed M. I Date 15 JAN. 68
FEATURE EXTERIOR DESIGN ANALYSIS	Checked Date

FLOODLIGHTING CALCULATIONS

CALCULATION FOR REQUIRED NUMBER & SIZE OF FLOODLIGHTS BASED ON "LUMENS IN THE BEAM" METHOD :

BEAM LUMENS REQUIRED = AREA IN SQ. FT. X FT. C. REQD X FACTOR FOR LIGHT

MAINTENANCE FACTOR

	BEAM	LU	MENS	REQUI		TABL	·	
AREA	DESCRIPTION		AREA	FOOT CANDLE X REQUIRED	LIGHT LOST FACTOR	MAINTENANCE FACTOR	AREA LUMENS LECUIRED	FLD. LGT. ANGLE REQUIRED
(285'X19	10')		A Section of the sect			134	4	
= (135'x 2	6')-(55'×27')			*				
	T') - (33' x44')		47028(SF)		1/0.75	0.75	83600	V: 73.5 H: No Lun I
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	OTAL				,			

(X) IES-NEMA TYPE

FL	FLOODLIGHT DATA TABLE												
DESCRIPTION	WATTS	BEAM	VERT. ANGLE TO 10%	HORIZ ANGLE TO 10%	LAMP LUMENS	BEAM EFF.	BEAM LUMENS	NO OF FLOOD- LIGHTS	F.C. MTD.				
47078 SF AREA	300	TYPE 5 (*	910	960	5900	52.12	3075	28	1.02				
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Project			Sheet 4	1	of	i 7	
Feature _			Designed		Date		
Item			Checked		Date		

ELECTRICAL DESIGN ANALYSIS

STATINTL

GATE HOUSE

STATIADRIOVED FOR Release 2001/03/03: CIA-RDP78-06632A000300010001-1 Project TRANSMITTER Feature GATE HOUSE Design ANALYSIS Designed Date LOAD & SERVICE ANALYSIS CONNECTED LOAD: 2.0 KVA MAX DEMAND LOAD: 2.00 X /.0 = 2.0 KVA BLDG DEMAND LOAD: 2.0 X (DEMAND FACTOR) BLDG DEMAND LOAD: 2.0 X (DIVERSITY FACTOR) SERVICE: /20/208 VOLTS: 1 PHASE 3 WIRE 60 CYCLES

SERVICE SIZES ARE DERIVED UNDER SERVICE SIZE ANALYSIS WHERE DISTANCE FROM THE TRANSFORMER STATION IS CONSIDERED IN CALCULATING SIZE.

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em ELECTR	ATE HOUSE	Ch€	cked	Date. Date	
in the second	LOAD	SCHE	D U L	E	
ITEM	LOAD DESCRIPTION	UNN LOAD	1	DEMAND LOAE-VA	
PANEL	LIGHTS	830	1.0	850	
No. Common (Contract of Contract of Contra	RECEPT	130	1.0	150	
	HEATER	1000	1.0	1000	
		2000	1.0	2000	
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ng magamagan na na mana na madamana na					
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